The Maryland Fruit Grower

March, 1936

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NELSON CHARLES GRAYBILL

After an extended illness of heart trouble, Nelson Charles Graybill passed away in a Baltimore hospital on March eleventh, in his sixty-fifth year.

Mr. Graybill was a native of Virginia and had spent his early life in the West. He moved to New Windsor, Maryland, many years ago, and became prominent in the civic life of that community. At the time of his death he was a member of the Town Council, vice president of New Windsor State Bank, owner of a plumbing and heating business, and owner of the New Windsor Orchards. Mr. Graybill was also a member of the Board of Directors of Juniata College, Huntingdon, Pa. He was also a member of the Executive Committee of the Maryland State Horticultural Society. Surviving are his widow and two daughters.

A quiet and unassuming man, Mr. Graybill had a host of friends who will miss him sadly. In his passing the community loses a fine citizen and the fruit industry loses a good grower and a loyal supporter.

APPLE SCALD

Maybe it's a waste of time to discuss apple scald, for it has been so much discussed in the past, but we will soon find it appearing in stored fruit of various varieties, and probably a little refreshing of our knowledge of this storage trouble will be of help or interest.

Scald affects the skin of the apple mostly, although it may involve the superficial layer of flesh, just under the skin. The main cause of scald is the unnatural storage and ripening of the fruit. Artificial storage is unnaturally cold, and not as well ventilated as if the apples were allowed to ripen in the orchard. Also the apples in cold storage ripen slowly and there is an accumulation of gases given off in the ripening process.

We all know that the apple is a living thing, and continues its "life processes" after being picked from the tree. Various gases and other substances are given off, as a result of the breaking down of such materials as acids and starches. These materials are converted into sugars and aromatic substances. These gases, if allowed to accumulate around the fruit, cause scalding of the skin. It is common observation that immature, poorly colored fruit will scald more easily, and even poorly colored parts of an apple will show scald, where the rest of the apple will not.

Now to correct a few wrong ideas regarding causes of scald. So far as is known, the fertilizers used have no effect upon scalding. Nitrogen is often blamed for scald. If fruit is in mature condition, well-colored, and is stored properly, it evidently will keep well, no matter what the fertilizer. Some growers claim that scald develops after storage. Scald develops during storage, and possibly somewhat before storage, depending upon the treatment of the fruit after picking and packing. Under such conditions the injury *shows up* after the fruit is removed from storage to warmer surroundings.

The control of scald, beside picking well-matured fruit, is to cool it as soon as possible, after picking and packing. Practical helps would be to place the picked fruit in the shade or some cool place as soon as possible after picking.

Good ventilation of the fruit is another essential, and of course, the use of shredded oil paper in the packages is a necessity. The principle of the use of the oiled paper is that the oil in the paper absorbs the aromatic products given off by the apple and so prevents their accumulation around the skin of the apple. It is easily seen that the paper must be so scattered throughout the packages that it will come in contact with as many of the apples as possible. The oil used in the paper must be tasteless and odorless, and the paper must contain at least 15 to 20% oil by weight. About one-half pound of paper well distributed throughout a bushel of fruit should give good scald protection.

NO UNEMPLOYED HERE

Dr. Charles Thom of the U. S. Department states that there are as high as 46 billions of active organisms in a gram of decomposing plant material. There are about 448 grams in a pound, or a double handful of mellow compost would contain soil bacteria numbering about 21,000,000,000,000. These bacteria carry on the work of making various plant food materials available in the soil, and also decompose the turned-under cover crops.

AT THE CROSS-ROADS?

Recently, Mr. P. D. Sanders, Editor of "The Southern Planter", wrote a forceful editorial regarding the future trend of the fruit industry, under the title, "At the Cross-Roads". Mr. Sanders was formerly Extension Entomologist in Maryland, and had intimate knowledge of the problems of the fruit grower. After mentioning the State Horticultural Societies of the Cumberland-Shenandoah Region, he states, in part:

"It is within the power of this group of growers to dictate the course our apple industry shall follow as it emerges from the throes of the depression, a slump that forced many unprofitable orchards and trees out of production. The growers must choose of two courses: (1) the treacherous road of the twenties along which individual whims frequently went counter to the interests of the industry, or (2) some kind of organized effort which will throw the great resources of the entire industry toward the very definite goals of quality, standardization and advertising. Strength lies in unity.

"And so it seems that the great opportunity before the fruit growers at this time is cooperative effort to prevent a new orgy of tree plantings on undesirable sites and of non-profitable varieties. We must, in some way, control production; we must produce apples of better quality—spray more scientifically, fertilize more wisely and prune with better judgment; and, finally, if we are to hold eastern markets for eastern apples, and further develop them, we must advertise on quality and be in a position to supply the apples when and where needed, and in the quantities desired."

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APPLE VARIETIES COMPARED

C. W. Ellenwood, Agricultural Experiment Station
Wooster, Ohio.

The variety question was the foremost topic of discussion of all horticultural societies a generation ago. In spite of all the information assembled and the experience of the past the proper selection of varieties may still be said to be the cornerstone of the orchard industry.

What is it that gives a variety the merit of persisting in commercial orcharding? Mainly quality of fruit, productiveness and hardiness of tree to determine the value of the variety.

In the first place, let us observe the variation in yields of a group of varieties given the same cultural treatment over a long period of years. The only apparent variable factor in this case was variety. It should be pointed out, however, that it might be possible that variability in either stock or scion could modify yield records and be mistaken for differences inherent to the variety. Then it should always be kept in mind that soil or climatic environment likewise modify the behavior of varieties. The table is presented here merely to show the range of yield of a group of varieties grown in the same orchard.

Average Yield 40 *Year Old Trees.* 24 *Year Record. Trees Given Same Treatment*

Variety	*Annual Yield Bu.*
Ben Davis	15.3
Golden Russet	11.9
Grimes	12.7
Jonathan	16.4
King	10.9
Lankford	9.6
Mann	14.7
Northern Spy	13.5
Northwestern	21.8
Oldenburg	12.9
Rambo	12.5
R. I. Greening	19.6
Rome Beauty	17.3
Salome	13.4
Stark	12.5
Walbridge	10.0
Wealthy	8.4
Winesap	6.6
Winter Banana	18.0
Wolf River	13.6
Yellow Bellflower	8.3
Yellow Transparent	11.7
York Imperial	17.9
Average for 32 varieties (some not listed)	13.8

14 varieties above the average.

Low Yields Effect Popularity

Northern Spy, Oldenburg, Wealthy and Transparent are the only varieties with yield records below the average which are now being planted to any extent. These varieties, because they fill a given season better than any other or because of hardiness of tree, still maintain a place among our leading varieties. Low yielding habit has been a contributing factor in driving such high quality sorts as King, Peck's, Rambo and Yellow Bellflower or the list. On the other hand, high yields seem to be mainly responsible for the retention of such varieties as Northwestern Greening and York Imperial, neither having quality as many other sorts.

Comparative Yield of Stayman and Delicious

Variety	*First 20 years Yield per tree pounds*
Delicious	4392
Stayman	5141

In still another orchard a comparison of the three main varieties grown at the end of the first 12 years of the life of the orchard we find the following record:

Comparative Yield of Wealthy, Baldwin, Stayman

Variety	*Average Production per Tree 1st 12 years—Pounds*
Wealthy	592
Baldwin	714
Stayman	845

A comparison of 3 of the newer varieties in the first 11 years of the life of an orchard gave production records as follows:

Comparative Yields of Golden Delicious, Cortland and Gallia Beauty

Variety	*Total Production per Tree 1st 11 years—Pounds*
Golden Delicious	1080
Cortland	864
Gallia Beauty	873

Quality Necessary

Quantity does not necessarily mean profit unless there is also a measure of quality. However, it should always be remembered that when yield is sacrificed to secure quality whether by variety or cultural practice that the better quality must compensate for the fewer pounds.

In addition to the varietal factor as an influence on total yield there is also a great difference in the bearing habits as relates to alternate and annual bearing.

Alternate Bearing Effects Yield

A variety which produces a medium sized crop every year will usually be more profitable than one which has the same average production over a long period of years but produces its crops in alternate high and low yields. For instance Transparent, Oldenburg and Wealthy in Ohio are notably on

and off year croppers. Grimes and Rome Beauty are two varieties much more regular in bearing habits. No doubt some of the extreme ups and downs of this natural bearing habit can be corrected by cultural practice but no one has yet found a way to make a block of Baldwins bear as regularly as Rome Beauty.

(Wisconsin Horticulture—January, 1936.)

DROUGHT SPOT

Dr. J. R. Magness, in reporting before the January meetings of the Maryland State Horticultural Society, stated that drought spot, cork, or corky-core appeared to be associated with insufficient moisture at some time during the growing season. He mentioned the work of investigators in British Columbia, and New Zealand, showing apparent control of drought spot, by use of boron which was lacking in the orchard soil. Dr. Magness stated, "The fact that this trouble has long been associated with drought conditions does not preclude the possibility of its being due to a nutritional deficiency". Some such deficiencies are worse under drought conditions, and it is known that drought spot cannot be corrected completely, even where ample soil moisture is furnished.

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In January, 1936 Canadian Horticulture magazine, J. R. Van Haarlem of Vineland, Ontario Experiment Station reports on "Some Results of Mineral Deficiency Studies", stating that some boron deficiency in the soil has occurred in case of turnips on Ontario. He reports on the work done at Summerland Experimental Farm, British Columbia, where boron has been "effective in curing drought-spot, corky-core, and die-back of apple trees". The treatment consisted of boring 7/16 inch holes about 2 inches deep in the tree trunks, and placing crystals of either manganous borate or boracic acid in the holes, and sealing the holes with emulsified asphaltum. From 13 to 21 grams of these salts were reported as "sufficient to completely overcome drought-spot and corky-core, as well as giving an increased yield". Of course, this work is still experimental, but will probably be given a thorough checking up in this country. According to the investigators, from 10 to 18 parts of boron per million parts of soil will produce trees bearing healthy fruit.

Dr. H. B. Tukey, writing in "The Rural New Yorker" asks, "Is the boric acid which we have used in the household as a mild antiseptic going to prove a control of internal cork of apples as well as a soothing eye wash?"

In some sections of the country, there are evidences of potash deficiency in some of the fruit soils, causing the leaves of strawberry, grape, peach, raspberry, and pear to develop "scorch". There is also a condition called "chlorosis" that causes certain fruits and vegetables to develop yellow leaves, due to the iron in the soil being unavailable to the plant. This usually occurs in soils where the iron compounds are in a form not readily available to the plant. The use of iron salts has cleared up this condition. There is also a chlorosis caused by lack of magnesium, and in cases of this trouble, in tobacco and spinach, the use of magnesium sulfate, or common Epsom salts, has corrected the trouble. Possibly soil deficiency studies within the next few years, will bring further changes in fruit growing methods.

Dr. J. G. Lipman, of New Jersey Agricultural Experiment Station, discussed these various elements, in the New Jersey Horticultural Society News, January, 1936, stating in part:

"At this particular time, there is much interest in these so-called "minor" elements.

It should be made clear here that the term "minor" is used to convey the idea that these particular ingredients are ordinarily found in plants in minute quantities. It is not intended to convey the thought that they are minor from the point of view of their importance in plant growth. Obviously, whatever may be essential for plant growth and development is of major importance. A survey of the rather extensive literature dealing with minor elements will show that these include manganese, boron, zinc, copper, iodine, fluorine, arsenic, selenium and others. They are of interest to the grower only to the extent that they may not be present in the soil in sufficient quantities to permit the normal development of any particular crop."

"I tell you I won't have this room!" protested the old lady to the bell-boy who was conducting her. "I'm not going to pay my good money for a closet with a measly little folding bed in it. If you think that just because I'm from the country—"

"Get in, lady, get in," the boy cut in wearily. "This ain't your room. This is the elevator."

—*Log.*

SPRAY RESIDUE TOLERANCES FOR 1936

Under date of February 7, 1936, the following letter regarding residue tolerances for apple and pear, was received from Assistant Secretary R. G. Tugwell:—

"Gratifying progress continues in the reduction of lead arsenate spray residue. The vast majority of fruit of the 1935 crop from one of the large producing sections where spray residue removal is most difficult was successfully cleaned to a point below the ultimate goal of 0.014 grain of lead per pound. However, in some instances the application of the most effective methods available for the removal of residue from fruit, and where precautionary spray schedules had been observed, failed to reduce the lead residue to below 0.018 grain of lead per pound.

"With the expectation that there will be no relaxation of effort to meet the figure of 0.014, the 1935 tolerance for lead of 0.018 grain per pound will remain in effect for the 1936 shipping season. The tolerances for arsenic and fluorine are 0.01 grain arsenic trioxide per pound and 0.01 grain fluorine per pound."

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It is time for payment of annual membership dues for 1936. Have you paid yours? The dues are one dollar per year. It costs something to keep up the activities of the Society. Get into the active list. Pay your dues before the busy season comes along, so you won't forget it, in the spring rush.

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